

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet	1	of	3
-------	---	----	---

Complete If Known

Application Number	Not Yet Assigned
--------------------	------------------

Filing Date	March 11, 2004
-------------	----------------

First Named Inventor	Ki Ha Lee
----------------------	-----------

Art Unit	Not Yet Assigned
----------	------------------

Examiner Name	Not Yet Assigned
---------------	------------------

Attorney Docket Number	IB-1825
------------------------	---------

U.S. PATENT DOCUMENTS

[illegible]

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	- Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
		BERTSEKAS, D. P., 1982, Enlarging the region of convergence of Newton's method for constrained optimization, J. Optimization Theory Applications, 36, 221-251.	
		GRAVES, R. W., 1996, Simulating seismic wave propagation in 3D elastic media using staggered-gris finite differences, Bull. Seism. Soc. Am., 86, 1091-1106.	
		KORMENDI, F., AND DIETRICH, M., 1991, Nonlinear waveform inversion of plane-wave seismograms in stratified elastic media, Geophysics, 56, 664-674.	
		LEVANDER, A. R., 1988, Fourth-order finite difference P-SV seismograms, Geophysics, 53, 1425-1436.	
		MARFURT, K. J., 1984, Accuracy of finite-difference and finite-element modeling of the scalar and elastic wave equations, Geophysics, 49, 533-549.	
		MINKOFF, S. E., AND SYMES, W. W., 1997, Full waveform inversion of marine reflection data in the plane-wave domain, Geophysics, 62, 540-553.	

Examiner Signature	<i>[Signature]</i>	Date Considered	09/5/05
-----------------------	--------------------	--------------------	---------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.**



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

Substitute for form 1449B/PTO		Complete If Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	Not Yet Assigned
		Filing Date	March 11, 2004
		First Named Inventor	KI Ha Lee
		Art Unit	Not Yet Assigned
		Examiner Name	Not Yet Assigned
Sheet 2	of 3	Attorney Docket Number	IB-1825

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
		OLDENBURG, D. W., MCGILLIVRAY, P. R., AND ELLIS, R. G., 1993, Generalized subspace methods for large-scale inverse problems, Geophys. J. Int., 114, 12-20.	
		PLESSIX, R.- E., AND BORK, J., 1998, A full waveform inversion example in VTI media: 68th Ann. Internat. Mtg., Soc. Expl. Geophys., Expanded Abstracts, 1562-1565.	
		PRATT, R. C., 1990, Inverse theory applied to multi-source cross-hole tomography, Part II: elastic wave-equation method, Geophys. Prospect., 38, 311-330.	
		PRATT, R. G., 1999-a, Seismic waveform inversion in frequency domain, Part 1: Theory and verification in physical scale model, Geophysics, 64, 888-901.	
		PRATT, R. G., 1999-b, Seismic waveform inversion in frequency domain, Part 2: Fault delineation in sediments using cross hole data, Geophysics, 64, 902-914.	
		PRATT, R. G., SHIN, C., HICKS, G. J., 1998, Gauss-Newton and full Newton methods in frequency-space seismic waveform inversion, Geophys. J. Int., 133, 341-362.	
		PRATT, R. G., AND WORTHINGTON, M. H., 1990, Inverse theory applied to multi-source cross-hole tomography, Part I: acoustic wave-equation method, Geophys. Prospect., 38, 287-310.	
		RANDALL, C. J., 1989, Absorbing boundary condition for the elastic wave equation, velocity-stress formulation, Geophysics, 54, 1141-1152.	
		SEN, M. K., AND STOFFA, P. L., 1991, Nonlinear one-dimensional seismic waveform inversion using simulated annealing, Geophysics, 56, 1624-1638.	
		SHENG, J., AND SCHUSTER, G. T., 2000, Finite-frequency resolution limits of travel time tomography for smoothly varying velocity models: 70th Ann. Internat. Mtg., Soc. Expl. Geophys., Expanded Abstracts, 2134-2137.	

Examiner Signature		Date Considered	08/15/05
-----------------------	--	--------------------	----------

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

Substitute for form 1449B/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet **3** of **3****Complete If Known**

Application Number	Not Yet Assigned
Filing Date	March 11, 2004
First Named Inventor	Ki Ha Lee
Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	IB-1825

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
OK		SONG, Z.- M., AND WILLIAMSON, P. R., 1995, Frequency-domain acoustic modeling and inversion of cross hole data: part I-2.5-D modeling method, Geophysics, 60, 784-795.	
OK		SONG, Z.- M., WILLIAMSON, P. R., AND PRATT, R. G., 1995, Frequency-domain acoustic wave modeling and inversion of cross hole data: Part II-inversion method, synthetic experiments and real-data results, Geophysics, 60, 796-809.	
OK		TARANTOLA, A., 1987, Inverse Problem Theory: Methods for Data Fitting and Parameter Estimation: Elsevier, Amsterdam, cover page.	
OK		VASCO, D. W., PETERSON, JR., J.E., AND MAIER, E.L., 1995, Beyond ray tomography: Wavepaths and Fresnel volumes: Geophysics, 60, 1790-1804.	
OK		VIRIEUX, J., 1984, P-SV wave propagation in heterogeneous media: velocity-stress finite-difference method, Geophysics, 51, 889-901.	
OK		VIRIEUX, J., 1986, SH wave propagation in heterogeneous media: velocity-stress finite-difference method, Geophysics, 49, 1933-1942.	
OK		YOMOGIDA, K., AND ETGEN, J. T., 1993, 3-D wave propagation in the Los Angeles Basin for the Whittier-Narrows earthquake, Bull. Seism. Soc. Am. 83, 1325-1344.	
OK		ZHOU, C., SCHUSTER, G. T., HASSANZADEH, S., AND HARRIS, J. M., 1997, Elastic wave equation travel time and wavefield inversion of crosswell data, Geophysics, 62, 853-868.	

Examiner
SignatureDate
Considered

08/15/05

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.